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The Buyarov-Rakhmanov formula for equilibrium problems with constraints and external fields, applications in linear algebra

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Recently, rational Krylov subspace techniques have been used for finding approximate eigenvalues or functions of large sparse symmetric matrices. The speed of convergence of such methods can be expressed in terms of discrete orthogonal rational functions, and hence related to some extremal problem in logarithmic potential theory with constraints and a varying external field [BG12, BGV10]. We will discuss the existence of a Rakhmanov-Buyarov representation of extremal measures and their potentials [BR99, CVA05], which will allow to explain superlinear convergence for the above methods.

Joint work with Stefan Güttel.

References

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